Experimental water cell and Plante Cell observations Revealing a possible positive effect of HV impulse charging.

By D.M.Rogers 17th Dec2007

High Voltage impulse charging as prescribed by John Bedini has been seen to charge a battery cell in a different physical manner. This may explain the positive gains claimed for Bedini impulse systems such as the SSG and in particular the "back popping" setups such as the FEG.

John has stated that the effect of "radiant charging" can only be measured via load testing the charge battery. That we can not measure the effect directly.

All this has proved a frustration to many of us who want to understand what is happening as well as be able to verify it for themselves in readiness for trying to utilise it for OTG purposes.

The main claim has been that when setup correctly and operated in a given way, more energy can be extracted from the system than has been supplied. Which therefore means Over Unity.

Proving this has been elusive, and this report will not even try to do so, or claim that what has been observed will offer it.

Trigger signal

It appears that the effects of sending a signal of a particular shape and energy will trigger a response in the charge battery that will show a gain. This is not new and John has claimed just this I believe (ref:- needed).

John and Tom Bearden have written and spoken about the effects radiant charging have on a battery, and how it can be tested by trying to charge them conventionally. If the battery has been charged with a so called "time charge" manner or Radiant manner, then trying to recharge it with a conventional charger will take much longer and won't even start charging for an extended period of time. I have found this to be true.

This is how Jim Watson's stolen battery was probably tested according to John.

So what actually happens to the battery when charged in such a fashion?

Water Cell to Plante Cell

The Lead acid battery was invented by a Gaston Plante. It was basically two lead electrodes in a solution of sulphuric acid. It had been observed that after electrolysis experiments using sulphuric acid as an electrolyte, that the electrolysis cell held a charge and so was born the rechargeable lead acid battery.

Improvements were made to electrode construction for improved capacity and lower internal resistance (and therefore slower self discharge), but the basic electro chemistry remains the same.

The Experiment

Using a small glass container a cell was created with replaceable electrodes.

I then applied two different signals to the cell generated by generator coils on a monopole rotor.

Open circuit the generator coils generate 160 – 180 volts DC. When applied to a load, would drop depending on load.

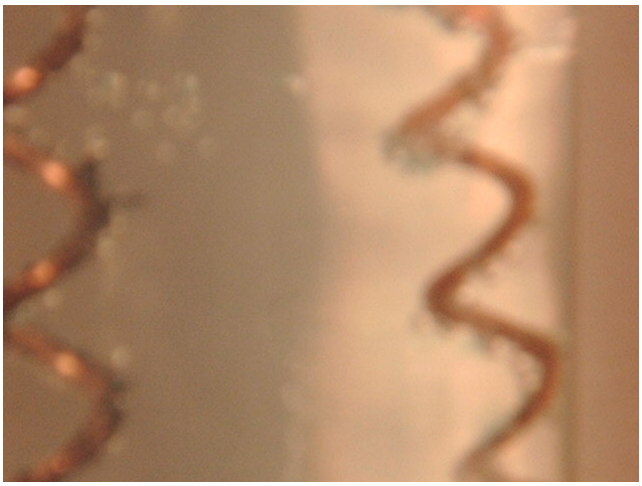
The first signal was a straight DC feed from the FWBR across the generator coils.

The second signal was a positive side pulsed signal, creating an impulse of high voltage and some current.

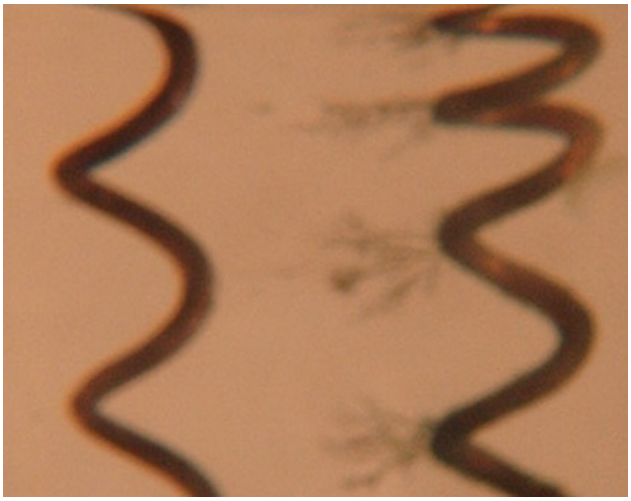
Observed Results

CELL 1 :-
De-ionised water and copper electrodes.

With straight DC the cell produced electrolysis on both electrodes and continued to do so whilst tested like this for several hours.


De-ionised water cell electrolysis with DC

With HV Impulse charging the cathode produced electrolysis as usual, but the Anode started to get growths that appeared to be growing within currents that could be seen between the electrodes.


Anode on right showing dendrite growths

CELL2:-
De-ionised water, Cu Cathode Pb Anode.
Straight DC produced only electrolysis.

HV Impulse charging produced Dendrite growth on the lead anode.

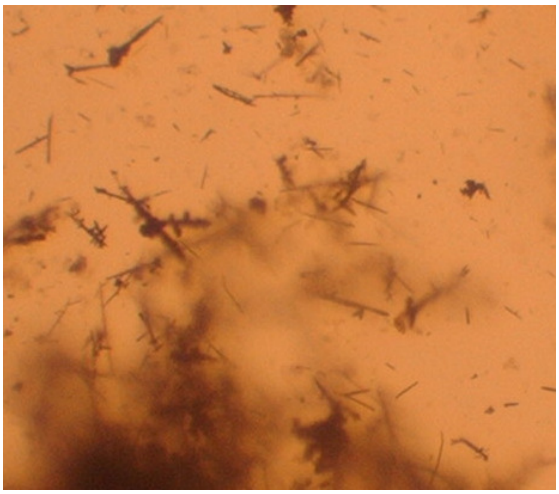

Pb anode on right showing growths

CELL 3-
De-ionised water and Pb electrodes.

Straight DC produced electrolysis only.

HV impulses produced a fine matt like growth over the anode that resembled wire wool when looked at under the microscope.


Pb Anode on right showing different dendrite structured growth (spongy lead?).



Microscopic close-up of Pb dendrites in suspension.

CELL 4:-
Sulphuric acid and lead electrodes.

This now constitutes a Plante cell and is a lead acid battery……..

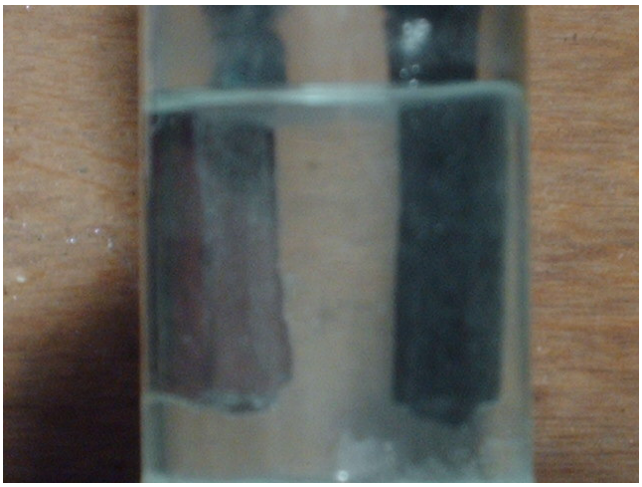
Plante Cell Observations

The Plante cell revealed something new to charging when compared to accepted text book knowledge.

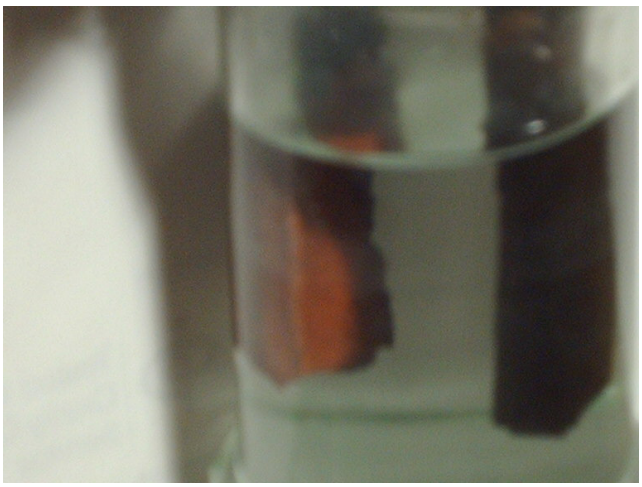
Straight DC to the Plante cell did a little more than just electrolysis this time. And exactly as per conventional teachings, the Cathode developed a chocolate brown coating of Lead Dioxide and the Anode turned a darkish grey of spongy lead.

However, with HV impulse charging, as with the water cell experiments, there are dendrite growths on the anode. These dendrites are a bright red / orange in colour.

Discharged state. Anode on left



Mid charge.



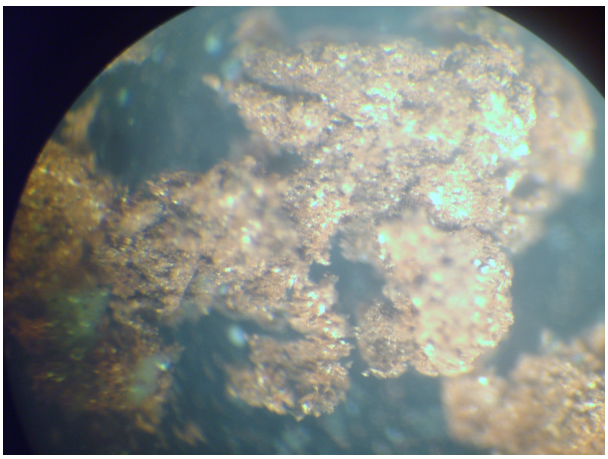
Finished charging.

If the cell is left or is discharged with a load, the dendrites disappear.

During charging, there appears to be a lot of small gas bubbles being produced and are indicative of hydrogen bubbles in size. The Cathode produces larger bubbles in comparison.

Initial Conclusion

HV impulse charging of a lead acid cell produces dendrite growths of probably Lead Tetroxide (red lead) on the Anode, as well as the usual Lead Dioxide dendrites on the cathode.



Microscopic close-up of Anode growth

Possible Chemistry

These are draft equations needing balancing and verification.

Conventional anode charge chemistry.
$PbSO_4 + H_2O + 2e \rightarrow Pb_{(s)} + H_2SO_4$

Possible Impulse anode charge chemistry.
$PbSO_4 + H_2O + 2e \rightarrow 2PbO.\ PbSO_3 + H_2SO_4 + H + O$

Conventional anode discharge chemistry.
$Pb(s) + H_2SO_4 \rightarrow PbSO_4 + H_2O + 2e$

Possible Impulse anode discharge chemistry.
$2PbO.PbSO_3 + H_2SO_4 \rightarrow Pb_{(s)} + H_2SO_4 + e$
$\rightarrow Pb_{(s)} + H_2SO_4 \rightarrow PbSO_4 + H_2O + 2e$

Possible Mechanism

Through following the process from de-ionised water cells with copper electrodes through to Plante cell lead acid batteries; it appears that the dendrite growths on the anode are via electro-deposition of the cathode material. Basically electro-plating with sulphuric acid as the electrolyte.

It is possible that under conventional charging regimes, there is only enough potential being applied to the battery to cause Lead plating on the anode (cathode if referring to electro-plating cell?????). This is what causes the spongy lead to "grow" on the anode, and why the anode gets heavier during charging.

With HV impulse charging, or with a signal of sufficient potential and dv/dt, the dendrites on the anode get oxidised by the broken water oxygen converting what would have been spongy lead to lead Tetroxide (Pb_3O_4, or more accurately $2PbO.\ PbO_3$).

Final thought

It maybe possible for the Pb_3O_4 to be the gain in the system and that once this has been returned back to solution on discharge the battery is left with the conventional charge construct.

Is it possible that these dendrite growths:-

Offer greater capacity to the battery
Offer a higher potential cell charge

The experiment continues…..

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